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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,542	12/18/2000	John H. Howard	5181-59700	8378

7590 10/21/2004

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EXAMINER	
GEREZGIHER, YEMANE M	

ART UNIT	PAPER NUMBER
2144	

DATE MAILED: 10/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/740,542	HOWARD ET AL.	
	Examiner	Art Unit	
	Yemane M Gerezgiher	2144	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-12,14,15,18-21 and 32-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-12,14,15,18-21 and 32-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *07/02/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Amendment received on 07/06/2004 has been entered. Claims 2-3, 13, 16-17 and 22-31 are cancelled and Claims 1, 4-12, 14, 15, 18-21 and newly added claims 32-35 are now pending in this application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 33 and 35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. "A storage configured to detect direct accesses by said computing node to said storage on said interconnect using said device identifier". See newly added

Claims 33 and 35. The recited imitation is not supported by the specification of this application.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1,4-12,14,15,18-21 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xu et al (U.S. Patent Number 6,324,581) in view of what would have been obvious to one of ordinary skill in the art at the time the invention was made.

As per claim 1, a computing node configured to generate a request to open a file **(See Figures 3 & 4, Column 9, Line 59 through Column 10 Line 35)** and a metadata server coupled to receive request **(See Figures 3 & 4, Column 10, Lines 12-14, Xu disclosed a metadata server configured to receive a request for a file from a data storage)**, wherein metadata server is configured

to provide at least a first file identifier corresponding to file responsive to request, first file identifier identifying at least a portion of file within a storage storing file; wherein computing node is coupled to receive first file identifier for directly accessing storage. **(See Column 10, Lines 14-17, Xu disclosed a metadata server providing the requesting node with a file identifier to the file which was requested to be accesses by returning a metadata information including pointers pointing where the requested file was stored and which storage device was associated with the request and accessing the desired file from a data storage device containing the cashed data file),** and wherein said metadata server is further configured to provide a device identifier identifying said storage on an interconnect to which at least said computing node and said storage are coupled; **(See Column 4, Lines 5-7, Xu disclosed a server computer returning a metadata of a file including information identifying the storage locations of the data storage storing the file)**

As per claim 4, wherein metadata server is configured to assign an access key to request. **(See Column 4, Lines 9-15, Xu disclosed a metadata server using a metadata of a file to produce a data access command key to access the data from the data storage)**

As per claims 5 and 6, wherein computing node is coupled to receive access key, and wherein computing node is configured to transmit access key with an access command to storage. **(See Figures 3-5 and ABSTRACT, Xu disclosed a client node interconnected to receive access file id and device location id and accessing a storage device directly by transmitting the access information to the storage device and where the storage was coupled to receive a metadata comprising an access key from the metadata server (claim 6))**. Xu disclosed a computing node been configured to transmit an access command to storage to close file, and where the command close was communicated among all the client node, the metadata server and the storage device (claims 7 and 14). **See Figures 7-10, Column 17, Line 35 through Column 18, Line 44.**

As per claim 8, wherein request includes a file name of file. **(See Column 4, Lines 25-48, Xu disclosed a request to access data file containing a specified file)**

As per claim 9, metadata server includes a directory, and wherein directory maps file name to first file identifier. **(See Column 2, Lines 9-50, Column 3, Lines 44-58 and Column 8, Lines 41-55, Xu disclosed a metadata server comprising a directory mapping requested files by the client node)**

As per claims 10 and 21, wherein computing node is configured to transmit an access command to storage to access one or more bytes, and wherein a number of one or more bytes affected by access command is not equal to a block size of storage. **(See Column 17, Lines 35-67, Xu disclosed a client node transmitting an access command to a storage device and accessing a byte or more using a file offset technique instead of reading the whole block size in read and write operations).**

As per claims 11-12, comprising storage and an interconnect, wherein computing node, metadata server, and storage are each coupled directly to interconnect. **(See Column 10, Lines 31-38, Xu disclosed the storage device a metadata server and the request initiating node interconnected by a high-speed where the computing node configured to directly access the storage device connected to the client node via the low latency interconnect and where the client node was configured to request for a file through the fiber optic channel to the metadata server and receiving a file id along with a storage device identification from the metadata server (claim 12). See Figures 3 and 4 and Column 9, Line 59 through Column 10 Line 25.**

As per claims 15, 18 and 19, generating a request to open a file from a computing node; **(See Figures 3, 4 and 5, Column 4,**

Lines 56-58 and Column 11, Lines 2-5, Xu disclosed a client generating a request to access a file from a file server having a metadata information about a storage devices) providing at least a first file identifier corresponding to file from a metadata server responsive to generating request, first file identifier corresponding to file and identifying file within a storage storing at least a portion of file; **(See Column 4, Lines 20-48)** providing a device identifier identifying storage from metadata server responsive to generating request. **(See Column 4, Lines 5-7, Xu disclosed a metadata of the file requested including a data storage device identifying the location in the data storage system) and *routing an access from computing node directly to storage using device identifier* (See Figures 3 and 4 and Column 4, Lines 1-60)** and directly accessing storage from computing node responsive to first file identifier, wherein computing node is configured not to cache data from file. **(See Column 10, Lines 14-17, Xu disclosed a metadata server providing the requesting node with a file identifier to the file which was requested to be accessed by returning a metadata information including pointers pointing where the requested file was stored and which storage device was associated with the request and accessing the desired file from a data storage device containing the cashed data file where assigning the access was in response to a request received**

from a computing node and transmitting access key from computing node to storage with an access command for storage (claims 18 and 19). See Column 10, Lines 1-25 and Figures 3-5).

As per claim 20, validating access key from computing node using access key from metadata server. **(See Column 1, Lines 20-31, Column 4, Lines 22-25 and Column 40, Lines 51-65, Xu disclosed checking an access key request received from a client at the metadata server).**

As per claims 32 and 34, said interconnect comprises one or more devices configured to route communications on said interconnect, and wherein said one or more devices are configured to use said device identifier to route communications from said computing node to said storage. **(See Figures 3 and 4, XU disclosed devices (computing node, storage device and a data mover routing request of a client device to access a file in the storage device enabling client directly accessing data from the storage device in the interconnect).**

As per claims 33 and 35, Xu disclosed that the storage device detecting/responds to the data access command received from the client device and accessing the data storage locations in the data storage." **See Column 4, Lines 13-15.**

Xu substantially disclosed the invention as claimed. However, Xu was silent regarding the client node been configured not to cache a file. However, caching at the client side was very well known in the art at the time the invention was made. Having said that, the omission of undesired feature is an obvious variation of a defined invention. See MPEP 2144.4(II)(a). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to avoid caching at the client node and modify the teachings of Xu related to client network having a direct access to a storage device using a high-speed fiber channel and access a specific portion of a file from the cached data in the file storage, because such a modification would eliminate the need of caching at the client node.

Response to Arguments

6. Applicant's arguments filed 07/06/2004 have been fully considered but they are not persuasive.

7. The inventive entity argues that Xu failed to teach "... metadata server is further configured to provide a device identifier identifying said storage on an interconnect to which

at least said computing node and said storage are coupled; ..." and recited "Xu do not teach or suggest at least 'said computing node is coupled to receive said first file identifier and said device identifier for directly accessing said storage on said interconnect' as recited in claim 1." See Applicant's Remark Page 8, First Paragraph and Page 7, Second Paragraph.

8. The inventive entity further argues by described that "identifier on the dedicated, direct bypass paths in Xu. None of Xu's system's teach or suggest ''said metadata server is further configured to provide a device identifier identifying said storage on an interconnect to which at least said computing node and said storage are coupled; wherein said computing node is coupled to receive said first file identifier and said device identifier for directly accessing said storage on said ' interconnect''. See Applicant's Remark Page 8, Second Paragraph.

For intelligibility reason, the Examiner recites below one definition of the term "metadata" defined by The Library of Congress, which reads as follows:

Metadata: Information that refers to one or more other pieces of information that can exist as separate physical forms. In short, data about data. Any type of description can be considered

metadata. Examples include library catalog information, encoded text file headers, and driver's license data. In the information technology world the term is often used to indicate data, which refers to digital resources available across a network.

Retrieved 10/12/2004 < http://memory.loc.gov/ammem/techdocs/repository/gengloss.html > revised: 04/29/1999.

Xu disclosed a client requesting for a file the data mover hereinafter referred to as the "metadata server" upon receiving the client request for a file transmitted a metadata (pointers showing the location of the cached disk arrays and the file pointer to perform read and write functionality on the requested file) back to the client requesting to access a file stored somewhere in the interconnect. The requesting client then directly accessing a file stored in the storage device interconnected. See Figures 3 and 4 below and direct quotations of the teachings disclosed below:

> a client first issues a request for metadata to the data mover 61. The data mover 61 responds by placing an appropriate lock on the file to be accessed, and returning metadata including pointers to where the data to be accessed is stored in the file system. The client uses the metadata

to formulate a read or write request sent over the bypass data path to the file system 62. See Column 10, Lines 13-19.

...The cached disk arrays 85, 86 could be spaced from each other, placed at various geographic locations, and interconnected by high-speed Fiber Channel data links. **See Column 10, Lines 33-35.**

For example, to access the first file system 83, the second client 88 sends a metadata request to the first data mover 81. The first data mover 81 places a lock on the file to be accessed, and returns metadata including pointers to the data in the file to be accessed. **See Column 11, Lines 23-28.**

The metadata server certainly provided a file identifier and storage location identifier when providing a requesting client device to perform a read and write tasks ("**client uses the metadata to formulate a read or write**". **See Column 10, Lines 13-19 and Column 11, Lines 23-28)**. Thus, the rejection made to the claims was proper.

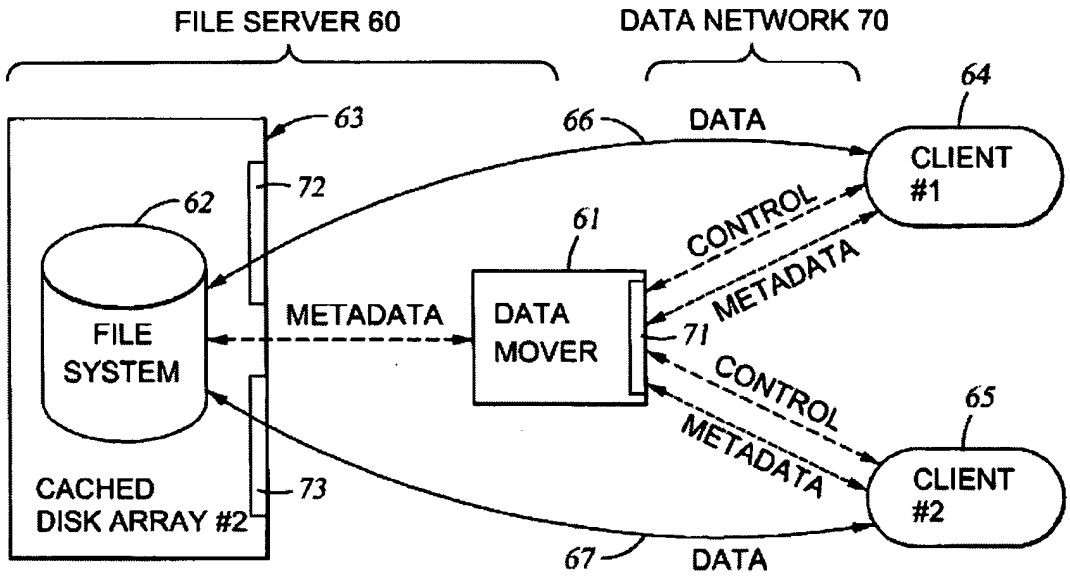
FILE SERVER 60
DATA NETWORK 70
63
64
66
DATA
CLIENT #1
72
62
61
CONTROL
METADATA
FILE SYSTEM
METADATA
DATA MOVER
71
CONTROL
METADATA
65
CLIENT #2
CACHED DISK ARRAY #2
73
67
DATA

Fig. 3

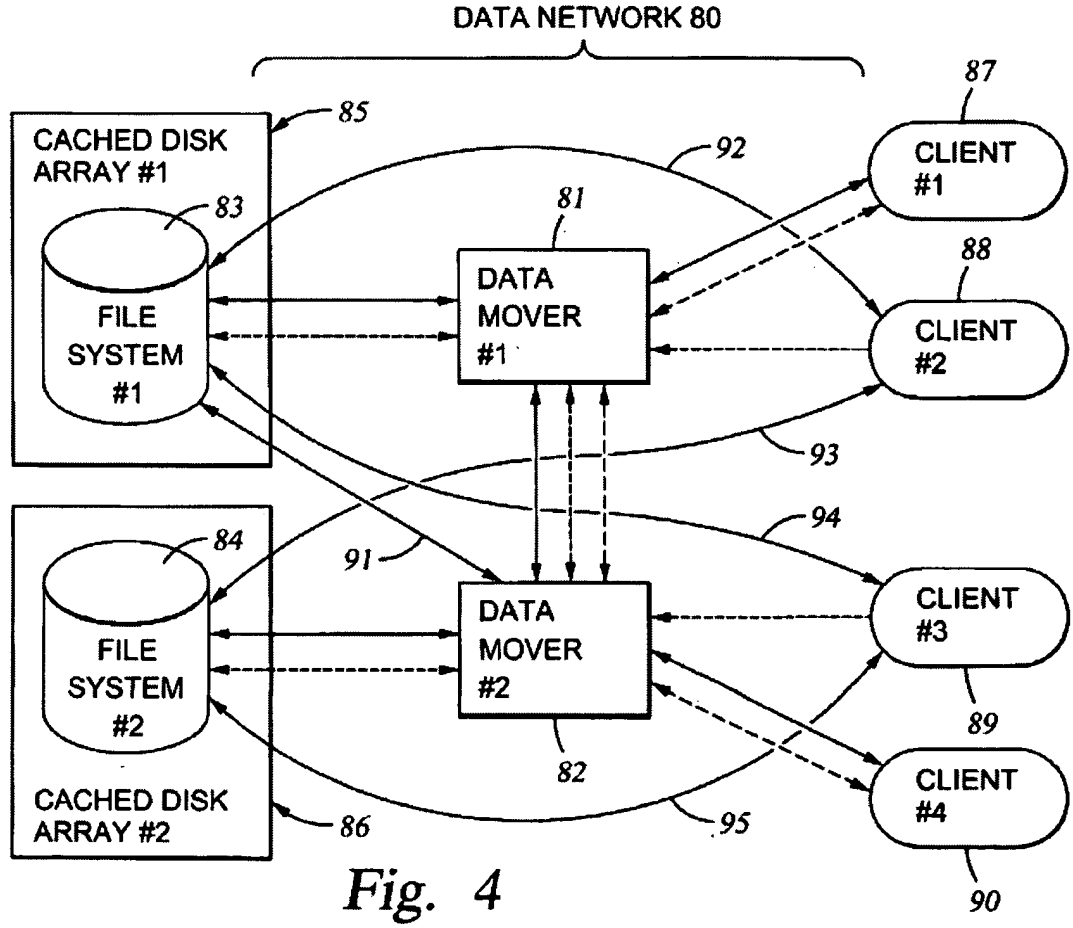
DATA NETWORK 80
87
85
CACHED DISK ARRAY #1
92
CLIENT #1
83
81
88
DATA MOVER #1
FILE SYSTEM #1
CLIENT #2
93
94
91
84
CLIENT #3
DATA MOVER #2
FILE SYSTEM #2
89
82
CACHED DISK ARRAY #2
86
95
CLIENT #4
90

Fig. 4

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Yemane Gerezgiher whose telephone number is 703-305-4874 or new number

(571) 272-3927 effective October 27, 2004. The examiner can normally be reached on Monday- Friday from 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful. The examiner's supervisor, William Cuchlinski, can be reached at (703) 308-3873 or new number (571) 272-3925 effective October 27, 2004.

Yemane Gerezgiher
AU 2144

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